

What is claimed is:

[Claim 1] A transportation system for moving passengers and freight, comprising:

- a track network, said track comprising a pair of side rails and a central rail;
- a plurality of vehicles, each said vehicle having a body with a width for one passenger seat, a plurality of wheels engaged on said side rails for supporting and moving the vehicle, a plurality of guiding wheels engaged on said central rail for centering the vehicle on the track, an identification means for providing vehicle identification information, a distance sensor for measuring distance and speed of an object in front of the vehicle, a wireless communication means, driving and braking means, and a vehicle control system connected with said distance sensor and said driving and braking means for controlling the driving and braking of the vehicle;
- a plurality of stops and stations on the side tracks off the main lines of said track network for loading and unloading, each stop and each station having an access notification device;
- a plurality of wayside control systems, each having a computer system, a means for detecting said vehicle identification information of said identification means of the vehicle, and a means for controlling switches on said track network;
- a central control system having a computer system for user registration, vehicle registration, and controlling the traffic flow;
- a communication network connecting said central control system, said wayside control system, said vehicle control system, and said access notification system;

whereby a passenger can enter said vehicle at a station or stop and move directly from origin to destination.

[Claim 2] The transportation system of claim 1, wherein said central rail has a substantially horizontal surface of high traction and substantially vertical surfaces symmetric with the central vertical plane of said track, and further comprising an additional driving and braking means, an actuating mechanism being adapted for movement of said additional driving and braking means between an unengaged position and an engaged position on said horizontal surface of said central rail for extra acceleration and braking capability in response to a signal from said vehicle control system.

[Claim 3] The transportation system according to claim 1, wherein said vehicle further comprises a coupling means for mechanically and electrically coupling the vehicles to form a train, said coupling means being adapted for movement between a coupled position and an uncoupled position in response to a signal from said vehicle control system;

whereby said central control system gives instruction to said vehicle control system for performing static and dynamic coupling of the vehicles;

whereby the capacity of said transportation system is increased by entraining.

[Claim 4] The transportation system according to claim 3, wherein said coupling means further comprises a sensor means for measuring the force between said coupled vehicles and sending said force information to said vehicle control system to adjust the driving means.

[Claim 5] The transportation system of claim 1, wherein said vehicle further comprises an input panel for inputting destination information;

whereby said passenger can change his destination during a trip.

[Claim 6] The transportation system of claim 1, further comprising a plurality of automatic parking facilities, each having a plurality of carriers for moving said vehicles to a parking position, and retracting said vehicles from a parking position.

[Claim 7] The transportation system of claim 1, further comprising a plurality of access devices, each access device having a memory for the user account information, a LCD display for said vehicle identification number, an open button, an close button, and a wireless communication means for communicating with the vehicle control system and the access notification device;

whereby a said user can use said access device to communicate with said access notification device and operate said vehicle.

[Claim 8] A transportation system for moving passengers and freight, comprising:

- a track network, said track comprising a pair of side rails and a central rail;
- a plurality of vehicles, each said vehicle having a body, a plurality of wheels engaged on said side rails for supporting and moving the vehicle, a plurality of guiding wheels engaged on said central rail for centering the vehicle on the track.

[Claim 9] The transportation system according to claim 8, wherein said central rail further comprises a plurality of movable sections for switching the direction of vehicles on the track network.

[Claim 10] A method of controlling movement of a vehicle through a track network having a plurality of merging points, diverging points, stations and stops, from an origin to a destination, comprising

- assigning a vehicle identification number to said vehicle;
- providing means for storing said vehicle identification number in said vehicle;
- providing a distance sensor means to said vehicle for avoiding collisions;
- setting up a plurality of control points, each before said merging point, diverging point, station and stop;

dividing said track network into a plurality of segments between said control points;
providing a wayside control system at each said control point, each said wayside control system has a means for detecting said vehicle identification number and a means for switch operation;
providing a vehicle control system to said vehicle for controlling the operation of said vehicle, said vehicle control system operatively connected to said distance sensor means;
providing a communication network for connecting said central control system with a plurality of said wayside control system and said vehicle control system;
planning the direction and speed profile of said vehicles before said control points by said central control system;
informing the direction of said vehicle to said wayside control system and informing the speed profile information to said vehicle control system through said communication network;
detecting said vehicle identification number of said vehicle by said wayside control system;
implementing said direction of said vehicle by said wayside control system;
implementing said speed profile for said segment of said track network and avoiding collision according to information from said distance sensor means by said vehicle control system;
whereby the infrastructure cost of said track network and the communication demand in said communication network are reduced.